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Cover Sheet for In-State Institutions
New Program or Substantial Modification to Existing Program

Institution Submitting Proposal	College of Southern Maryland

Each action below requires a separate proposal and cover sheet.

- (●) New Academic Program
- ( ) New Area of Concentration
- ( ) New Degree Level Approval
- ( ) New Stand-Alone Certificate
- ( ) Off Campus Program
- ( ) Substantial Change to a Degree Program
- ( ) Substantial Change to an Area of Concentration
- ( ) Substantial Change to a Certificate Program
- ( ) Cooperative Degree Program
- ( ) Offer Program at Regional Higher Education Center

Payment Submitted:	(●) Yes ( ) No	Payment Type:	( ) R*STARS # (●) Check # 605425	Payment Amount: $850.00	Date Submitted: 1/28/25

Department Proposing Program	STEM and Professional Studies
Degree Level and Degree Type	Associate of Science
Title of Proposed Program	Physical Sciences
Total Number of Credits	60
Suggested Codes	HEGIS: CIP:
Program Modality	(●) On-campus ( ) Distance Education (fully online) ( ) Both
Program Resources	(●) Using Existing Resources ( ) Requiring New Resources
Projected Implementation Date (must be 60 days from proposal submisison as per COMAR 13B.02 03 03)	(●) Fall ( ) Spring ( ) Summer Year: 2025
Provide Link to Most Recent Academic Catalog	URL: http://catalog.csmd.edu
Preferred Contact for this Proposal	Name: Dr. Nicole Harrell Title: Assessment and Curriculum Coordinator Phone: (301) 934-7569 Email: nbharrell@csmd.edu
President/Chief Executive	Type Name: Dr. Yolanda Wilson Signature: [signature] Date: 1-15-25
	Date of Approval/Endorsement by Governing Board:

Revised 1/2021

COLLEGE OF SOUTHERN MARYLAND
CSM
1958

Office of the President

January 14, 2025

Dr. Sanjay Rai
Secretary of Higher Education
Maryland Higher Education Commission
6 N. Liberty Street
Baltimore, MD 21201

Re: New Academic Degree Program: Physical Sciences

Dear Dr Rai:

The College of Southern Maryland (CSM) is submitting a proposal for an Associate of Science (AS) in Physical Sciences. This degree will provide affordable and high-quality options designed for part- and full-time students with academic and/or professional interest in the areas of the physical sciences. The degree will include two concentrations: chemistry and physics. Each concentration is designed to prepare students for transfer to a similar four-year program at a college or university. These concentrations provide a common first semester for maximum flexibility for those students still deciding which area to explore. These options are designed to prepare students for specific concentrations at a four-year Maryland state college or university.

The program is approved by CSM's Curriculum and Instruction Committee, Executive Cabinet, and the Board of Trustees. We are seeking the Commission's approval to offer this program beginning Fall 2025. We are requesting for MHEC to provide CIP and HEGIS codes for this program.

Sincerely,

Yolanda Wilson, Ed.D President
College of Southern Maryland

Office of the President
Center for Business and Industry Room 204
8730 Mitchell Road. PO Box 910. La Plata MD 20646-0910
301-934-7625 • www.csmd.edu

A. Centrality to Institutional Mission and Planning Priorities:

1. Provide a description of the program, including each area of concentration (if applicable), and how it relates to the institution's approved mission.

This Associate of Science transfer option is designed for part- and full-time students with academic and/or professional interest in the areas of the physical sciences. The degree is composed of two concentrations: chemistry and physics. Each concentration is designed to prepare students for transfer to a similar four-year program at a college or university. These concentrations provide a common first semester for maximum flexibility for those students still deciding which area to explore. CSM's mission statement states that it seeks to provide "an affordable postsecondary education". Having a common first two semesters, as is planned for the new physical sciences degree, will allow students to explore for the year within the degree without having to take additional, costly classes. This common first two semesters will allow students time to determine if chemistry or physics is the right path without costing students' money in wasted credits.

2. Explain how the proposed program supports the institution's strategic goals and provide evidence that affirms it is an institutional priority.

The physical sciences degree is a split from the mathematics and sciences A.S. degree. With the mathematics and sciences A.S., the five concentrations under the degree only had three courses in common (ENG 1010, ENG 1020, FYS 1010), none of which were science courses. Only two concentrations had a common first semester. The physics and chemistry concentrations had FYS 1010, ENG 1010, MTH 1200, CHE 1200 & CHE 1200L as a common first semester. Therefore, to meet the Institution's Strategic Goal #1 Strategy 1.1 (Clarify the paths; ensure students have the information and resources they need to achieve their academic and career goals.), separating physics/chemistry from the other math and science concentrations helps to clarify that common pathway for physical sciences students. 2021-2024-csm-institutional-strategic-plan_-defining-our-future-1.pdf (csmd.edu).

3. Provide a brief narrative of how the proposed program will be adequately funded for at least the first five years of program implementation. (Additional related information is required in section L.

Funding will be from existing resources. No new courses result from this program; therefore, there is no need for additional resources, neither in personnel nor supplies. This program is only the separation of the physical sciences from the other mathematics and sciences disciplines into a stand-alone program.

4. Provide a description of the institution's a commitment to:

a) ongoing administrative, financial, and technical support of the proposed program
b) continuation of the program for a period of time sufficient to allow enrolled students to complete the program.

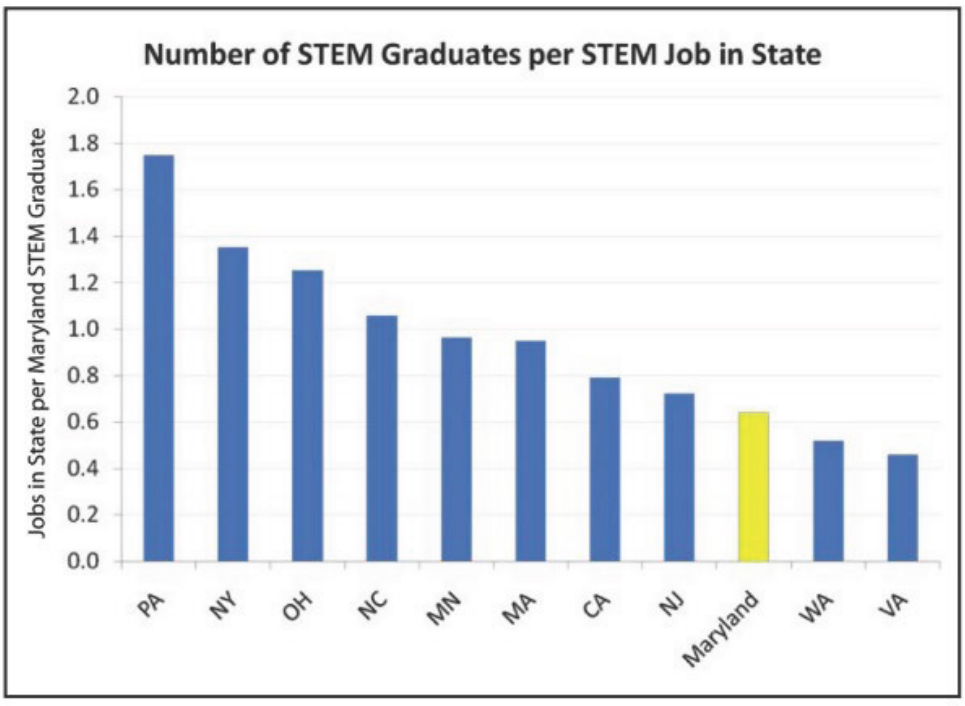
A program review of the mathematics and sciences A.S. degree was completed in 2021. The program review included a self-study and an evaluation by an external reviewer. The external reviewer was Dr. Jeffrey J. Byrd, Interim Vice President for Academic Affairs and Professor of Biology & Microbiology at St. Mary's College of Maryland. Dr. Byrd had been an external reviewer for both biology and natural sciences at other institutions, commissioner for the Middle States Commission on Higher Education, and was a member of the Transfer with Success Act Committee for MHEC. Both the self-study and external reviewer concluded that the Mathematics and Sciences degree should be split, with the physical sciences (physics and chemistry) separating from the other mathematics and sciences disciplines.

These findings were presented to the Academic Learning and Assessment Committee at the College of Southern Maryland, with attendance including the various stakeholders (Provost and Vice President of the Division of Learning, Dean of Science and Health, Dean and Associate Dean of Business and Technical Studies, and the coordinators of the affected programs). The new physical sciences degree has since been approved by the Curriculum and Instruction Committee as well as the Board of Trustees. Thus, the college has demonstrated commitment to this degree plan and will support the program administratively, financially, and with the technical support needed to assure student success.

B. Critical and Compelling Regional or Statewide Need as Identified in the State Plan:

1. Demonstrate demand and need for the program in terms of meeting present and future needs of the region and the State in general based on one or more of the following
   a)The need for the advancement and evolution of knowledge.

Maryland does not have the number of graduates needed to meet the STEM jobs in the state according to Maryland Department of Labor. Maryland.gov, has approximately 6000 STEM job openings per year, yet only graduates approximately 4000 STEM graduates. Refer to p20stemreport.pdf (state.md.us) .



Source: IPEDS and America's Career Infonet

It is essential that viable physical science educational opportunities remain to meet the demands of our many research institutions. In addition to the university research institutions, this region boasts of many federal research laboratories also in need of scientists. Local federal research laboratories include NIH, NIST, NASA Goddard, FDA, NOAA, and Fort Detrick.

b) Societal needs, including expanding educational opportunities and choices for minority and educationally disadvantaged students at institutions of higher education.

c) The need to strengthen and expand the capacity of historically black institutions to provide high quality and unique educational programs.

While not an HBCU, the College of Southern Maryland is diverse and thus, having a physics and chemistry degree program will help advance the opportunities for minority students in the region. The College of Southern Maryland student enrollment consists of 50.9% White students and 49.1% being minority students. African American/Black students represent 27.3% of the student body. College of Southern Maryland | Data USA .

Currently, there are 19 students enrolled in the chemistry and physics concentrations from the mathematics and sciences A.S. degree being represented demographically by 10 White students, 4 Black students, 1 Asian student, 1 Hispanic student, and 3 Unknown-race students. While enrollment is relatively low, the College of Southern Maryland strengthens the opportunities of Black students in physical science. Twenty-one percent of those currently enrolled in the physical sciences are Black students, whereas Black students represent only 3% of physics and 7% of chemistry undergraduate degree graduates according to IPEDS, US Census, and APS. Bachelor's Degrees Earned by African Americans, by Major (aps.org)

2. Provide evidence that the perceived need is consistent with the Maryland State Plan for Postsecondary Education.

According to the Maryland State Plan, the second primary goal is to, "Promote and implement practices and policies that will ensure student success". Goal #2, priority #5 states, "Maintain the commitment to high-quality postsecondary education in Maryland." 2022 Maryland State Plan for Higher Education

One measure of success for a program is demonstrating that students can meet the student learning outcomes for the program. Through the program review, it was determined that "course learning outcomes were developed separately from program learning outcomes". As a result, no common assessments were found within the mathematics and sciences concentrations to meet the individual student learning outcomes. Some concentrations had no assessment for a given student learning outcome. For example, the biology concentration had no course offerings to align with outcome #6 (Demonstrate effective written and oral communication skills in technical subjects).

By separating physical sciences from mathematics and sciences, a set of common student learning outcomes with clearly defined assessment tools can be obtained. Physical sciences have many subjects in common and with both fields (chemistry and physics) having a more technical focus, finding commonality for creating student learning outcomes is easily generated. Having clarity for program outcomes and definitive assessments to measure those outcomes will help to clearly show student success and reveal obstacles to success that need elimination. By having two fields with clear commonalities assessed collaboratively, determining what works well and what needs improvement will help make a high quality post-secondary program.

C. Quantifiable and Reliable Evidence and Documentation of Market Supply and Demand in the Region and State:

1. Describe potential industry or industries, employment opportunities, and expected level of entry (ex: mid-level management) for graduates of the proposed program.
2. Present data and analysis projecting market demand and the availability of openings in a job market to be served by the new program.

Maryland is the number one location for job opportunities as a physicist. The number one reason for the growth in available physics jobs is due to the large number of retirees and thus these job opportunities reflect replacing the current employees vacating positions. According to the U.S. Bureau of Labor Statistics, the percent change in employment projected from 2020-2030 for physicists is +9%. Chemistry is also a growing field with the fastest growing area in pharmaceuticals, especially in nanotechnology. According to the U.S. Bureau of Labor Statistics, the percent change in employment projected from 2020-2030 for chemists/materials scientists is +8%. Therefore, having a viable physics and chemistry degree is necessary to meet the societal needs, both in content knowledge and employment requirements.

3. Discuss and provide evidence of market surveys that clearly provide quantifiable and reliable data on the educational and training needs and the anticipated number of vacancies expected over the next 5 years.

The Southern Maryland region is expecting positive growth in employment opportunities. Part of the reason for these employment needs is due to the college's close physical proximity to the Patuxent Naval Air Station in St. Mary's County which employs over 17,000 military, civilian, and contractors. The mission of the Patuxent Naval Air Station is to "enable mission partner success by providing the finest base operating support and customer service in direct support of research, development, test, and evaluation missions." Naval Air Station Patuxent River (navy.mil). Therefore, this Air Station employs many in STEM fields. Below is a representation of expected growth, according to employment project reports retrieved from EMSI in 2020.

Region	2020 Jobs	2025 Jobs	Change	% Change
Region	247,493	254,023	6,530	2.6%
State	1,234,173	1,269,948	35,775	2.9%
Nation	23,455,386	24,071,420	616,034	2.6%

Market demand data

4. Provide data showing the current and projected supply of prospective graduates.

Between 2018 and 2020, the mathematics and sciences degree produced 5 graduates in the chemistry and physics concentrations. The College of Southern Maryland transfer coordinator was surveyed during the program review and her assessment was that the combined mathematics and sciences degree created such a rigid course structure that articulation agreements with transfer institutions were hindered. The intent of separating the physical sciences from the mathematics and sciences degree is to allow for physical science specific course needs to increase articulation agreement opportunities, making degree completion more likely and transfer more seamless. This new program is expected to not only increase physical sciences graduates but increase enrollment in the physical sciences at the College of Southern Maryland.

D. Reasonableness of Program Duplication:

1. Identify similar programs in the State and/or same geographical area. Discuss similarities and differences between the proposed program and others in the same degree to be awarded.

Using the keyword: physical science; and the degree: Associate degree, in the link provided (MHEC Academic Program Inventory), one community college was listed - Carroll Community College.

Like the physical sciences degree that CSM is proposing, Carroll also has a concentration in chemistry and physics. Carroll's program differs in that it has a third concentration in geology.

Between Carroll and CSM, the only difference in the chemistry concentration is CSM has a 3-math sequence vs. Carroll having only 2. Otherwise, the two concentrations parallel exactly. For the physics concentration, CSM has a 5-math sequence vs. Carroll has only 4. Otherwise, the two concentrations parallel nicely.

2. Provide justification for the proposed program.

While Carroll Community College may have a similar program, the College of Southern Maryland and Carroll Community College are 87 miles apart in distance; therefore, the two colleges are not competing for the same students. In addition, the College of Southern Maryland has greater diversity, meeting the needs of minority students. Carroll Community College is 81.4% White with only 4.51% Black/African American. Carroll Community College | Data USA. Therefore, the two institutions service a different population and thus are not direct competitors.

There is a need for two institutions to have a similar degree because physical science is an essential degree leading to high-paying jobs in our area. The median annual wage for STEM occupations is $86,980 according to https://www.csmd.edu/programs-courses/credit/school-of-science-and-health/mathematics-sciences.html.

E. Relevance to High-demand Programs at Historically Black Institutions (HBIs)

1. Discuss the program's potential impact on the implementation or maintenance of high-demand programs at HBI's.

While not an HBI, Prince George's County Community College (PGCC) is considered a Predominantly Black Institution (PBI) and is the closest PBI to the College of Southern Maryland.

While PGCC does not have a physical sciences degree, the college does have a chemistry associate of arts in general studies. Like Carroll Community College, PGCC has a 2-math course sequence (ending at Calculus II) rather than the 3-math sequence CSM is proposing. PGCC's program has a more liberal arts focus with prescribed courses in philosophy (Introduction to Logic), communications (Interpersonal Communication), and history (History of African Americans to 1877) or Micro- or Macroeconomics. While the focus of the program is different, there is some direct competition, as both PGCC and CSM have articulation agreements with St. Mary's College of Maryland in chemistry and biochemistry. There are articulation agreements where the two institutions are not in direct competition. For example, CSM has an articulation with Stevenson University for chemistry where PGCC does not, while PGCC has a Morgan State University chemistry agreement where CSM does not.

PGCC does not have a physics program and the only physics-related program is the secondary education-Physics, A.A.T. Because there is no physics program, there is no articulation agreements, and thus CSM is not a direct competitor of PGCC in physics. Thus, there is no impact on this PBI in physics.

F. Relevance to the identity of Historically Black Institutions (HBIs)

1. Discuss the program's potential impact on the uniqueness and institutional identities and missions of HBIs.

The complete list of minority serving institutions in Maryland are the following: Faith Theological Seminary (PBI), Prince George's Community College (PBI), University of Baltimore (PBI), Washington Adventist University (PBI), Bowie State University (HBCU), Coppin State University (HBCU), Morgan State University (HBCU), University of Maryland Eastern Shore (HBCU), Montgomery College (AANAPISI), and University of Maryland Baltimore County (AANAPISI).

From this list, there are only two community colleges - Prince George's Community College and Montgomery College. Montgomery College's minority serving designation is for Asian American and Native American Pacific Islander- serving, not a Historically Black Institution. Thus, the only impact on an HBI would be Prince George's Community College which was addressed in the previous question.

While there is no specific chemistry or physics transfer agreement, CSM does have a guaranteed admissions agreement with Bowie State University and Coppin State University. Therefore, the College of Southern Maryland actively encourages students to transfer to HBIs. Below is the table showing where the current mathematics and sciences degree students transfer when leaving the College of Southern Maryland.

G. Adequacy of Curriculum Design, Program Modality, and Related Learning Outcomes (asoutlined in CO -MAR 13B.02.03.10):

1. Describe how the proposed program was established, and also describe the faculty who will oversee the program.

The proposed program resulted from the mathematics and sciences degree program review. The degree was a barrier to the physical science students' success because the rigidness of the courses made articulation agreements an obstacle. In addition, there were many differences in the degree requirements between mathematics, biology, and physical science students; therefore, the merger of these concentrations into one program seemed arbitrary and lacked uniformity. The coordinators involved in the program review are the coordinators who will oversee the new physical sciences degree. The faculty in those concentrations will be the same faculty in the new degree. The physics coordinator is James McCrary and the chemistry coordinator is Valerie Shelton.

2. Describe educational objectives and learning outcomes appropriate to the rigor, breadth, and (modality) of the program.

The 3 student learning outcomes are as follows:

1. Interpret the results of collected lab data.
2. Communicate scientific ideas and principles clearly and effectively in technical subjects.
3. Apply fundamental concepts and techniques in their chosen physical science field.

These program outcomes are essential to any physical science field and the core courses provide a strong science foundation in preparation for entering the physical sciences. The course-level outcomes will be changed to better match the program outcomes. However, the current course outcomes meet the needs of the program since the areas of study (i.e. chemistry and physics) previously existed in the deactivated mathematics and sciences A.S. degree program.

3. Explain how the institution will:
a) provide for assessment of student achievement of learning outcomes in the program

b) document student achievement of learning outcomes in the program

Assessment of student learning outcomes will be completed using the College of Southern Maryland's required assessment plan. Each academic year at least one program student learning outcome will be assessed and reported to the Director of Academic Assessment for review by the Academic Learning and Assessment Committee (ALAC).

Student learning outcomes are as follows::

The student learning outcome #1: Interpret the results of collected lab data is assessed using the Newton's second law lab assignment in PHY 1310.

The student learning outcome #2: Communicate scientific ideas and principles clearly and effectively in technical subjects is assessed using the Acid-Base titration lab assignment in CHE 1200L.

The student learning outcome #3: Apply fundamental concepts and techniques in their chosen physical science field is assessed by the half-titration of a weak acid assignment in CHE 1210L for the chemistry concentration and the heat of fusion and heat of vaporization assignment in PHY 2300 for the physics concentration.

4. Provide a list of courses with title, semester credit hours and course descriptions, along with a description of program requirements

Curriculum Schema

Course	Credits
SEMESTER 1 – common first semester for chemistry and physics	
ENG 1010 - Composition and Rhetoric	3
CHE 1200 – General Chemistry I CHE 1200L – General Chemistry I Lab	4
MTH 1200 – Calculus I and Analytic Geometry	4
FYS 1010 – First Year Seminar	3
SEMESTER 2 – common second semester for chemistry and physics	
PHY 1310 – Calculus-Based Physics I: Mechanics and Fluids and Lab	4
CHE 1210 – General Chemistry II CHE 1210L – General Chemistry II Lab	4
ENG 1020 – Composition and Literature	3
MTH 1210 – Calculus II	4
SEMESTER 3 – common PHY 2300 and MTH 2200 for chemistry and physics	
PHY 2300 – Calculus-Based Physics II: Vibrations, Heat, and Electricity with Lab	4
MTH 2200 – Calculus III	4
Chemistry concentration: CHE 2200 – Organic Chemistry I CHE 2200L – Organic Chemistry I Lab BIO 1060 – Principles of Biology I BIO 1060L – Principles of Biology I Lab	8
Physics concentration: MTH 2220 – Introduction to Linear Algebra	8

MTH 2210 – Differential Equations	
SEMESTER 4 – common social sciences, arts and humanities, and elective for chemistry and physics	
Program Electives (2) - Acceptable: Any college 5 level course numbered 1001 or above Arts and humanities of choice (3)	
SOC 1010 – Introduction to Sociology	3
PSY 1010 – General Psychology	3
Chemistry Concentration: CHE 2210 – Organic Chemistry II CHE 2210L – Organic Chemistry II Lab	4
Physics Concentration: PHY 2320 – Calculus-Based Physics III: Magnetism, Optics, and Modern Physics with Lab	4
TOTAL	60 credits

Course descriptions:

FYS-1010 - First Year Seminar (3)
Prerequisite: Take Reading Placement or RDG-0800 or take one of the following: IRW-0900A, IRW0900B, or IRW-0900C - Must be taken either prior to or at the same time as this course.
Co-requisite: Take Reading Placement or RDG-0800 or take one of the following: IRW-0900A, IRW0900B, or IRW-0900C - Must be taken either prior to or at the same time as this course.

This interactive course is designed to increase student success at the College of Southern Maryland. Students will engage in self-assessment to develop and strengthen academic and critical thinking skills and promote cultural awareness. By participating in career exploration and educational planning, students will understand college expectations and learn about academic resources and student success services. Transfer in students with 24 credits and a cumulative GPA of 2.0 may not be required to take this course. Please see an Academic Advisor.

MTH-1200 - Calculus I and Analytic Geometry* (M) (4)
Prerequisite: MTH 1150; or MTH 1120 and MTH 1130

This first course in the calculus sequence is intended for students in the fields of mathematics, engineering, and the physical and life sciences. Topics include limits, continuity, derivatives, basic differential equations, parametric equations, indefinite and definite integration. Differential calculus applications include L'Hopitals Rule, curve sketching, optimization, Newton's Method, and rate problems, and integral calculus applications include areas of regions. This course satisfies the General Education Mathematics requirement.

ENG-1010 - Composition and Rhetoric* (E) (3)
Prerequisite: ENG 0900; and RDG 0800; or placement

Students in this course complete their first semester college-level composition course. Students focus on planning, organizing, and developing a variety of argumentative compositions. Students practice the conventions of written Standard American English, gain information literacy skills, and learn research and documentation techniques, including conducting online and print research and documenting sources. By the end of the semester, students demonstrate their ability to write a unified and coherent argument-based essay of about one thousand words that incorporates research and is nearly free of grammatical, mechanical, and structural errors. Students should refer to the schedule of classes for sections of this course taught in a computer lab. Students must pay an additional lab fee when taking this course in a computer-assisted classroom. Students may earn credit for this course through CLEP or Advanced Placement Examination. A minimum grade of "C" is required to pass the course. This course satisfies the General Education English Composition requirement.

ENG-1020 - Composition & Literature* (H) (3)
Prerequisite: ENG 1010 or ENG 1010T

Students in this course complete their second semester college-level composition course. Using critical literary analysis, students build on the planning, organizing, and critical analysis skills learned in ENG-1010, Composition and Rhetoric. Students use literature (short fiction, poetry, and drama) as the basis of their critical analysis and to extend, deepen, and illuminate their own experiences and connections with the larger world and contemporary issues. Students further master the conventions of written Standard American English, information literacy skills, and research and documentation techniques including conducting online and print research and documenting sources. By the end of the semester, students demonstrate their ability to write a unified, coherent argument-based essay that is nearly free of grammatical, mechanical, and structural errors.

MTH-1210 - Calculus II* (M) (4)
Prerequisite: MTH 1200

This continuation of MTH 1200 includes integral applications such as volumes of solids, arc length, moments and centers of mass, areas of surfaces of revolution, work done by a variable force, fluid pressures and forces. Also introduced are transcendental functions, techniques of integration including numerical integration and improper integrals, sequences and series and their applications in differential and integral calculus, conic sections and polar coordinates. This course satisfies the General Education Mathematics requirement.

PHY-1310 - Calculus-Based Physics I: Mechanics and Fluids with Lab (S) (4)
Prerequisite: MTH-1200
Co-requisite: MTH-1210

This calculus-based course is the first of a three course physics sequence. Topics include kinematics, the laws of motion, force and energy, principles of mechanics, linear momentum, rotation, gravity, and properties of fluids. Lab work includes experiments on vectors, equilibrium, force, motion, energy, momentum, and properties of materials.

PHY-2300 - Calculus-Based Physics II: Vibrations, Heat, and Electricity with Lab (4)
Prerequisite: MTH-1210, PHY-1210 and PHY-1210L OR PHY-1310

This calculus-based course is the second of a three course physics sequence. Topics include thermodynamics, vibrations, waves, electrostatics, and circuits. Lab work includes experiments on oscillatory motion, waves, sound, thermodynamics, electricity, and circuits.

BIO-1060 - Principles of Biology I* (S) (3)
Prerequisite: Reading Placement; or RDG-0800; or take one of the following: IRW-0900A; IRW0900B; IRW-0900C; and MTH-0992 or MTH-0950 or higher

In this course for science majors, students study basic chemistry, the molecules of life, cellular structures and function, membrane transport, enzymes, cellular metabolic pathways and photosynthesis. They also study DNA, the genetic code and gene expression. Other topics studied include intercellular communications. The design and functions of an animal system is explored. Credit for this course may be earned through Advanced Placement Examination. For students in the Arts and Sciences: Biological Sciences program, credit may not be earned for both BIO 1060 and BIO 1020. This course satisfies the General Education Biological Science requirement.

BIO-1060L - Principles of Biology I Lab* (S) (1)
Co-requisite: BIO-1060

Students perform hypothesis formulation and testing using experiments in chemical identification, diffusion and osmosis, enzymes, cellular respiration and photosynthesis. Also included are exercises in DNA purification and electrophoresis of DNA. Credit for this course may be earned through Advanced Placement Examination. For students in the Arts and Sciences: Biological Sciences program, credit may not be earned for both BIO 1060L and BIO 1020L. This course satisfies the General Education Biological Science requirement.

PSY-1010 - General Psychology (B) (3)
Prerequisite: Reading Placement; or RDG-0800; or take one of the following: IRW-0900A; IRW0900B; IRW-0900C

This course provides an overview of the scientific study of human behavior and mental processes. Topics include the history of psychology, research methods, neuroscience, sensation, perception, learning, motivation, cognition, abnormal behavior, personality theory, social psychology, and other relevant topics.

CHE-1200 - General Chemistry I* (S) (3)

Prerequisite: Take CHE 1050 and CHE 1050L (Score 20 or above on California Chemistry Diagnostic Test and waive CHE-1050/CHE-1050L); Reading Placement; or take one of the following: IRW 0900A, IRW 0900B, or IRW 0900C; and MTH 1115 or MTH 1120 or MTH 1150.

Students learn fundamental principles of chemistry based on a study of the physical and chemical properties of metallic and nonmetallic elements. Topics include the structure of matter, symbols, formulas and equations, chemical bonding, gaseous state and the kinetic molecular theory, solutions, oxidation reduction, the periodic table, and thermochemistry. Credit for this course may be earned through Advanced Placement Examination. This course satisfies the General Education Physical Science requirement.

CHE-1200L - General Chemistry I Lab* (S) (1)
Prerequisite: “C” or better in CHE-1050 or take co-requisite course
Co-requisite: CHE-1200

Lab work includes basic chemical lab techniques and safety precautions and experiments in volumetric and gravimetric analysis. Computer assisted data collection and analysis is also performed. This course satisfies the General Education Physical Science requirement.

CHE-1210L - General Chemistry II - Lab* (S) (1)
Co-requisite: CHE-1210

Lab work includes computer assisted-data collection and analysis, lab techniques and safety precautions during experiments in equilibrium, reaction rates, and titration. Students also perform several qualitative analysis experiments. This course satisfies the General Education Physical Science requirement.

CHE-1210 - General Chemistry II* (S) (3)
Prerequisite: CHE-1200; CHE-1200L

The continuation of CHE-1200 includes chemical equilibrium chemical kinetics, ionic equilibrium, solubility product, hydrolysis, electrochemistry, liquid and solid states, acids, bases and salts. Credit for this course may be earned through Advanced Placement Examination. This course satisfies the General Education Physical Science requirement.

CHE-2200L - Organic Chemistry I - Lab* (S) (1)
Co-requisite: CHE-2200

Lab work includes preparation, separation, purification, and identification of typical organic compounds. Chromatographic techniques receive special emphasis.

CHE-2200 - Organic Chemistry I* (S) (3)
Prerequisite: CHE 1210 and CHE 1210L

Students are introduced to organic chemistry according to family, with integration of aliphatic and aromatic compounds. The basic interdependence of properties and structure is demonstrated using a mechanistic approach. This course satisfies the General Education Physical Science requirement.

CHE-2210L - Organic Chemistry II - Lab* (S) (1)
Co-requisite: CHE-2210

This continuation of CHE-2200 lab includes experimentation involving reaction kinetics and analysis; and interpretation of infrared, nuclear magnetic resonance, and mass spectra of organic compounds. This course satisfies the General Education Physical Science requirement.

CHE-2210 - Organic Chemistry II* (S) (3)
Prerequisite: CHE-2200; CHE-2200L

This course continues to develop the principles and processes presented in CHE 2200 including nucleophilic substitution, nucleophilic addition, and carbanion chemistry. This course satisfies the General Education Physical Science requirement.

MTH-2200 - Calculus III* (4)
Prerequisite: MTH 1210

This course is a continuation of MTH 1210 and is an introduction to multivariable calculus. Topics include vectors and the geometry of space, vector-valued functions, multivariable functions and their geometry, partial differentiation, multiple integration in rectangular, cylindrical and spherical coordinates and vector analysis that includes Green, Stokes, and the Divergence Theorems. Some topics are supported by computer software.

MTH-2220 - Introduction to Linear Algebra* (4)
Prerequisite: MTH-1210

Students study systems of linear equations, matrices, and determinants, as well as finite dimensional vector spaces, inner product spaces, linear transformations, eigenvalues, and eigenvectors. Applications include curve fitting, network analysis, Cramer's rule, and differential equations. Some topics are supported by computer software.

MTH-2210 - Differential Equations* (4)
Prerequisite: MTH-1210

Students learn to solve ordinary first order, higher order linear, and systems of differential equations. Matrix theory along with the eigenvalue problem is covered to provide a matrix approach to solving systems of differential equations. The Laplace Transform as an integral transform is defined and applied. Students apply their knowledge to problems of rate, falling bodies, growth and decay, cooling, series and simple harmonic motion. Some topics are supported by computer software.

PHY-2320 - Calculus-Based Physics III: Magnetism, Optics, and Modern Physics with Lab (4)
Prerequisite: PHY-2200 and PHY-2200L OR PHY-2300

This calculus-based course is the third of a three course physics sequence. Topics include magnetism, alternating current, Maxwell's equations, geometrical optics, physical optics, and modern physics. Lab work includes experiments in magnetism, AC circuits, optics, and modern physics.

SOC-1010 - Introduction to Sociology* (B, C) (3)
Co-requisite: RDG 0800

The scientific study of human behavior in groups explores the relationships among society, culture, and personality development. Social groups, social control, collective behavior, and social change are related to the family, economics, government, and politics. This course satisfies the General Education Social/Behavioral Science requirement and the Core Competency for Cultural and Global Awareness.

5. Discuss how general education requirements will be met, if applicable.

The general Education requirements will be met as follows:

AA, AS, ASE, AAT	
General Education	
3 credits English Composition	ENG-1010 - Composition and Rhetoric* (3)
6 credits Arts/Humanities	ENG-1020-Composition and Literature (3) Arts and Humanities of choice which could include one of the following: COM-1010 – Basic Principles of Speech Communication or COM-1650 – Introduction to Public Speaking (3)
3 credits Biological/Physical Sciences	CHE-1200 General Chemistry I (3)
4 credits Biological/Physical Sciences (with lab)	PHY-1310 – Calculus-based Physics I (4)
6 credits Social/Behavioral Sciences	PSY-1010 – General Psychology (3) SOC-1010 – Introduction to Sociology (3)
3 credits Mathematics	MTH-1200 – Calculus 1 and Analytic Geometry (4)
Other General Education (from above categories) (3-11 credits)	Gen Ed Elective from Gen Ed Listing FYS 1010 – First-year Seminar (3)
MHEC requires 28-36 credits	**Total General Education= 29**
Major requirements:	MTH 1210 (4), MTH 2200 (4)
	CHE 1200L (1), CHE 1210/L (4)
	PHY 2300 (4)
	Chemistry concentration: BIO 1060/L (4), CHE 2200/L (4), CHE 2210 (4)
	Physics concentration: MTH 2220 (4), MTH 2210 (4), PHY 2320 (4)
	Program Electives (2)
	Total Program Major Physical Science = 31
	Total Physical Sciences = 60 credits

6.Identify any specialized accreditation or graduate certification requirements for this program and its students.

There are no specialized accreditation or graduate certification requirements for this program and its students.

7.If contracting with another institution or non-collegiate organization, provide a copy of the written contract.

The College of Southern Maryland is not contracting with another institution.

8. Provide assurance and any appropriate evidence that the proposed program will provide students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technology competence and skills, technical equipment requirements, learning management system, availability of academic support services and financial aid resources, and costs and payment policies.

9. Provide assurance and any appropriate evidence that advertising, recruiting, and admissions materials will clearly and accurately represent the proposed program and the services available.

The College of Southern Maryland will provide clear, complete, and timely information on the curriculum, academic support services, financial aid resources and payment policies through the college's catalog and web site. In addition, students receive information about technical requirements and use of the learning management system through the college's Help Desk and support from the Distance Learning and Faculty Development area of the college. Professional development opportunities are available for faculty to enhance pedagogical skills to better support student success.

Advertising, recruiting, and admissions materials clearly and accurately represent the proposed program and available student services. Prospective and current students have access to the same online materials detailing these resources. In addition, marketing materials are developed through collaboration among academic leaders and the Marketing staff using a shared platform for proofing and editing materials.

See below evidence of student access to information and support:

https://catalog.csmd.edu/

https://www.csmd.edu/student-services/index.html

https://www.csmd.edu/student-services/learning-support/tutoring/index.html

https://www.csmd.edu/programs-courses/credit/online-learning/getting-started.html

First Semester *

Course	Credits
FYS 1010	3
MTH 1200	4
CHE 1200/L	4
ENG 1010	3
Total	14

Second Semester *

Course	Credits
CHE 1210/L	4
PHY 1310	4
MTH 1210	4
ENG 1020	3
Total	15

Third Semester *

Course	Credits
PHY 2300	4
MTH 2200	4
Choose 1: CHE 2200/L (4) OR MTH 2210	4
Choose 1: BIO 1060/L (4) OR MTH 2220	4
Total	16

Fourth Semester *

Course	Credits
SOC 1010	3
PSY 1010	3
Arts and humanities	3
Choose 1 CHE 2210 (4) OR PHY 2320	4
2 elective credits	2
Total	15

This Associate of Science transfer option is designed for part- and full-time students with academic and/or professional interest in the areas of the physical sciences. The degree is composed of two concentrations: chemistry and physics. Each concentration is designed to prepare students for transfer to a similar four-year program at a college or university. These concentrations provide a common first semester for maximum flexibility for those students still deciding which area to explore. All students are advised to consult an academic advisor and their intended transfer institution to ensure that courses selected are applicable for transfer. The maximum number of credits accepted in transfer from other institutions to this program is 45.

CAREER OPPORTUNITIES

Astronomy, biochemistry, chemistry, consulting, data analysis, engineering, environmental science, forensics, materials science, medical physics, medicine, patent law, pharmacy, physics, quality assurance/control, research analysis, science writing, teaching, technical sales.

H. Adequacy of Articulation

1. If applicable, discuss how the program supports articulation with programs at partner institutions. Provide all relevant articulation agreements.

The previous Mathematics and Science AS degree is being separated into a Biology degree and a Physical Sciences degree with concentrations in chemistry and physics. CSM will seek to re-sign the existing articulation agreements from the mathematics and sciences degree chemistry and physics concentrations with the new physical sciences degree label. CSM currently has a biomedical science articulation with McDaniel College based on the chemistry concentration, a chemistry agreement with Stevenson University and Virginia Commonwealth University, a physics agreement with Swansea University, chemistry and physics agreements with St. Mary's College of Maryland, and suggested plans in chemistry and physics with West Virginia University.

The mapping of the new curriculum was made based on the transfer trends of CSM students and the current articulation agreements already established. The majority of CSM students in chemistry transfer to Towson University (representing 12 of the 33 students transferring to Maryland public institutions). Most CSM physics students transfer to University of Maryland College Park followed by Towson University (representing 9 and 7 students respectively out of 20 students transferring to Maryland public institutions).

Therefore, using these transfer trends and articulation agreements, the new curriculum was forged to meet the needs of each institution, so a seamless transfer is possible for students.

Please refer to Appendix A for Articuliton Agreement.

I. Adequacy of Faculty Resources (as outlined in COMAR 13B.02.03.11).

1. Provide a brief narrative demonstrating the quality of program faculty. Include a summary list of faculty with appointment type, terminal degree title and field, academic title/rank, status (full-time, part-time, adjunct) and the course(s) each faulty member will teach in the proposed program.

Full-time Faculty member	Activities for staying current in the field	Professional activities
Eleazer Ekwue	Attend Faculty development training opportunities at CSM. Participate in professional conferences including AFFACCT, American Association of Physics Committee. Teachers (AAPT) and Chesapeake Section American Association of Physics Teachers (CSAAPT), and Maryland Distance Learning Association (MDLA).	Participated in planning and execution of CSM International Education Week Celebration organized by the Global Initiative

James McCrary	I am an International Council on Systems Engineering (INCOSE) Certified Systems Engineering Professional (CSEP). As a physics professor who teaches engineering students, I believe it is important for me to maintain my CSEP certification and so I renew my certification every three years by earning systems engineering related Professional Development Units (PDUs). I also subscribe to physics and education periodicals such as The Physics Teacher and Physics Today to keep me up to date with trends in both physics and education.	I am a member of the American Association of Physics Teachers (AAPT) and to keep current with trends in physics education I attend the annual Fall and Spring Meetings of the Chesapeake Section of the AAPT. I am also a member of the International Council on Systems Engineering (INCOSE) and the American Institute of Physics (AIP). I also attend the AFACCT conference where pedagogy is the focus and the Maryland Collegiate STEM Conference.
Valerie Shelton	Member of the American Chemical Society (ACS). Read Chemical & Engineering News, the Journal of Chemical Education, and Science Magazine to stay current in my field. Attend NIH Community College Day, 2YC3 (2 Year Community College Chemistry Consortium), and AFACCT Conferences regularly. Take CSM Faculty Development training and attend webinars on effective teaching practices.	Co-PI of NSF S-STEM Grant. Serve on CSM Faculty Senate Committees.
Buddhadeb Malik	Participated in NIH Community College Day (2019 and 2020). Attended CSM pre-semester workshops on new teaching technologies.Attended Association of American Colleges & Universities (AACU) webinar series and annual AFACCT Conferences. Attended other CSM and external faculty development seminars and webinars.	Redesigned CHE 1350 (General Chemistry for Engineers) for the 7-week term.

Everett Oliver	Earned a Master's Degree in Biochemistry & Molecular Biology, and currently pursuing a PhD in Biochemistry & Molecular Biology.	3-year NIH grant collaboration between Howard and Georgetown University: Metabolic Characterization of Conditionally Reprogrammed Cells, with an emphasis on hepatocellular carcinoma. Publications: -2020: Varghese RS, Zhou Y, Barefoot M, Chen Y, Di Poto C, Balla AK, Oliver E, Sherif ZA, Kumar D, Kroemer AH, Tadesse MG, Ressom HW. Identification of miRNA-mRNA associations in hepatocellular carcinoma using hierarchical integrative model. BMC Med Genomics. -2019: Yao Z, Di Poto C, Mavodza G, Oliver E, Ressom HW, Sherif ZA. DNA Methylation Activates TP73 Expression in Hepatocellular Carcinoma and Gastrointestinal Cancer. Sci Rep.

*Need to be at least 50% full time faculty

Faculty Member Name	Terminal Degree	Full-Time or Part-Time	Courses Taught
Valerie Shelton	PHD	Full-time	CHE 1200/L, 1210/L, 2200/L, 2210/L
Buddhadeb Mallik	PHD	Full-time	CHE 1200/L, 1210/L
Everett Oliver	PHD (expected May 2023)	Full-time	CHE 1200/L, 1210/L
Eleazar Ekwue	PHD	Full-time	PHY 1310, 2300

James McCrary	MS	Full-time	PHY 1310, 2300, 2320, 1110, 1120
Lori Crocker	MS	Full-time	BIO 1060/L
John W. Barracato	MS	Adjunct	CHE 1200, 1200L, 1210, 1210L
Ellen Estevez	M.Ed	Adjunct	CHE 1050L
Michael Shellem	MS Engineering	Adjunct	PHY 1110, 1310
Souheil Ghannouchi	PHD	Adjunct	CHE 1050, 1200

2. Demonstrate how the institution will provide ongoing pedagogy training for faculty in evidenced-based best practices, including training in:
   a) Pedagogy that meets the needs of the students
   b) The learning management system
   c) Evidenced-based best practices for distance education, if distance education is offered.

All faculty in the Physical Sciences program are highly educated and have the expertise to deliver quality classroom and laboratory teaching that enables students to achieve the student learning outcomes. In addition, the College of Southern Maryland provides ongoing pedagogy training for faculty in evidenced-based best practices including pedagogy that meets the needs of the students, training related to use of the learning management system, and training related to best-practices for distance education. The college's Distance Learning and Faculty Development area has designed numerous online courses that prepare faculty to use the college's learning management system, BrightSpace, D2L. Faculty (full-time and adjunct) are required to complete this training as a condition of employment. In addition, the college uses an ongoing peer review and support process called Online Academic Rigor and Presence (OARP) to provide education and continuous improvement on best practices related to distance learning. The college's Division of Learning Schools also provide monetary support for faculty to attend professional development. Through the Faculty Development Committee, peer colleagues and guest speakers also address the ongoing education for pedagogy that supports the needs of students.

J. Adequacy of Library Resources (as outlined in COMAR 13B.02.03.12).

1. Describe the library resources available and/or the measures to be taken to ensure resources are adequate to support the proposed program.

Students may borrow circulating materials from any of the three CSM library branches. Through the interlibrary loan program (ILL), students can order almost any book, periodical article, or document needed. These materials are generally available within one week of the request. Library resources also include audiovisual collections to be use in the library and classrooms only. Additionally, substantial material is available through online databases, including ProQuest and EBSCO.

CSM's President assures that appropriate library resources are available to support the needs of this program.

K. Adequacy of Physical Facilities, Infrastructure and Instructional Equipment (as outlined in COMAR 13B.02.03.13)

1. Provide an assurance that physical facilities, infrastructure and instruction equipment are adequate to initiate the program, particularly as related to spaces for classrooms, staff and faculty offices, and laboratories for studies in the technologies and sciences.

CSM is a leader among Maryland community colleges in offering courses which meet the busy schedules of our students. CSM courses include the following formats: traditional face-to-face courses, asynchronous online courses, real-time technology courses, Hy-flex courses which allow students to choose in-person or remote learning, and Web-hybrid courses which offer a mix of online and traditional classroom face-to-face instruction.

The college makes available state-of-the-art facilities on four campuses to accomplish its mission in support of our community's academic, professional, and self-enrichment pursuits. Theory content classes can meet in the standard classrooms for all concentrations. Standard classrooms include a smart podium, dry erase board, projection screen, and projector. Some classrooms are outfitted with cameras for a Hy-flex option. Science labs are equipped with non-flammable lab benches in the form of lines or work groups. Chemistry/microbiology labs have gas hook-ups at the student workstations. The classrooms and laboratories are adequately outfitted and reflect the common set-up seen in other institutions and lab settings. The buildings, classrooms and laboratories are ADA accessible with ramps and elevators where appropriate. No accessibility issues have arisen regarding physical spaces.

2. Provide assurance and any appropriate evidence that the institution will ensure students enrolled in and faculty teaching in distance education will have adequate access to:

a) An institutional electronic mailing system, and

b) A learning management system that provides the necessary technological support for distance education

The software used in each discipline must have a VPAT that is analyzed for accessibility through the CSM accessibility department. The D2L courses have recently instituted the use of Ally, a software that indicates the accessibility of the materials within the course shell. Students are provided with college email addresses and have access to Help Desk support for use of email, the learning management system, and other technology.

CSM's President assures that appropriate physical facilities, infrastructure, and instructional equipment are available to support the needs of this program.

L. Adequacy of Financial Resources with Documentation (as outlined in COMAR 13B.02.03.14)

1. Complete Table 1: Resources and Narrative Rationale. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each resource category. If resources have been or will be reallocated to support the proposed program, briefly discuss the sources of those funds.

As of February 26, 2025, there are 18 students enrolled in the mathematics and sciences program in the concentrations of either chemistry or physics. Assuming in-county residency, consistent tuition rate of $140/credit, a combined fee rate of 25% tuition equating to $35/credit, the financials were calculated based on the current 3 full time chemistry and 1 full time physics student and the 10 part time chemistry and 4 part time physics students. Because tuition and fees are likely to go up rather than down, this revenue may actually be higher than projected. Tuition and Fees (csmd.edu). The College of Southern Maryland only charges students per credit and does not charge an annual tuition rate.

TABLE 1: RESOURCES

Resource Categories	Year 1	Year 2	Year 3	Year 4	Year 5
1. Reallocated Funds	$0	$0	$0	$0	$0
2. Tuition/Fee Revenue (c + g below)	$70,000	$73,500	$77,000	$80,500	$89,250
a. Number of F/T Students	4	4	4	4	5
b. Annual Tuition/Fee Rate ($175 x 30 credits)*	$5,250	$5,250	$5,250	$5,250	$5,250
c. Total F/T Revenue (a x b)	$21,000	$21,000	$21,000	$21,000	$26,250
d. Number of P/T Students	14	15	16	17	18
e. Credit Hour Rate	$175	$175	$175	$175	$175
f. Annual Credit Hours Rate	20	20	20	20	20
g. Total P/T Revenue (d x e x f)	$49,000	$52,500	$56,000	$59,500	$63,000
3. Grants, Contracts & Other External Sources (Donations of equipment/supplies and grants)	$0	$0	$0	$0	$0
4. Other Sources	0	0	0	0	0
TOTAL (Add 1 – 4)	$70,000	$73,500	$77,000	$80,500	$89,250

* The credit hour rate ($175) is based upon CSM's current tuition rate of $140 plus 25% combined fee.

Other Resources:
Reallocated Resources: There will not be reallocation of existing resources.
Grants and Contracts: There are currently no grants and contracts allocated to this program.
Other Sources: There are no other sources of revenue associated with this program.

2. Complete Table 2: Program Expenditures and Narrative Rationale. Provide finance data for the first five years of program implementation. Enter figures into each cell and provide a total for each year. Also provide a narrative rationale for each expenditure category.

EXPENDITURES

This program is just making physical science a stand-alone degree rather than concentrations under a combined mathematics and science degree; therefore, no new personnel or change in supplies will be needed.

Equipment: Consumable supplies and equipment will be used for lab course management. It is estimated that $12,000 in supplies and equipment will be adequate for lab course support. These will not be new expenses but are included because this is the only expenditure discussed in the MHEC directions that didn't expressly say that it was equipment needs for a new program.

Consumables:

Chemistry

Chemicals, glassware, pipettes, pipette tips, crucibles, burets, filter paper, pH paper, Pasteur pipettes, chromatography plates, gloves, batteries, calculators, test tubes, googles, plastic pipettes, DI bottles, acetone bottles, methylene chloride bottles, soap, paper towels

Physics

Batteries, 1.5 volt, size AA, AAA, D, 6 volt
Fuses, 3 Amp blade fuse
Van der Graaff generator belts
Durables

Chemistry
Replace inoperable FTIR (Infrared Spectrometer) (1)
NMR Spectrometer (1) (perpetual software site license, 8 concurrent, update 5 yrs)
Gas Chromatograph, mini-GC (1)
Additional Gas Chromatograph, mini-GC plus
Fluorescence Quartz cuvettes (2 pair)
Spectrum tube system/power supply (1 x 3)
Spectrum tubes (5 x 3)
Centrifuges (8 x 3)
Analytical Balances (6, LAPL)
Analytical Balances (4 x2 LEON/PRIN?)
Eppendorf pipets, 10 in LAPL (replace or repair 2 every 2 years)
Purchase Eppendorf pipets (4 x 2) for LEON/PRIN (replace or repair 1 every 2 years)
Hot plates (8 x 3) (replace 6 every 5-7 years)
Replace Stuart Melt Stations (4 LAPL) with Vernier melt stations (in next 5-10 years)
Lab Quest 2's (8 x 3)
Vernier melt stations (3 x 3)
UV-Vis Spectrometers (8 x 3)
pH, pressure, temperature probes (8 x 3 ea)
New sensors/probes (technology refresh every 7 years beginning 2023)

Physics

digital thermometers
Basic Coil Set
Complete Coil Set
Electric Field Mapping Apparatus
Galvanometer
Van de Graaf Generator
Electrostatic Whirl
Mini Laser w/ bracket
Photoelectric Effect
Basic Optics System
Basic Calorimeter Set
Hot Plate
Resonance Apparatus
Electron charge-to-mass ratio system
5 MHz Function Generator
North-South Magnet, Pair
Meter Sticks, 6 pack
Ballistic Pendulum
Freefall Adapter
Air Track Accessory Kit
Variable Output Air Supply
Lab Jack Medium
Slotted Masses
Mass and Hanger Set
Digital Caliper
O Haus 8200 g Balance
Pasco Stopwatch
Quantitative Centripetal Force Apparatus

Library: Because this is only a change from being a concentration to a stand-alone program, there will be no new library expenses as a result of this change.

TABLE 2: PROGRAM EXPENDITURES:					
Expenditure Categories	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Faculty (b + c below)	0	0	0	0	0
a. Number of FTE	0	0	0	0	0
b. Total Salary	0	0	0	0	0
c. Total Benefits	0	0	0	0	0
2. Admin. Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
3. Support Staff (b + c below)	$0	$0	$0	$0	$0
a. Number of FTE	0	0	0	0	0
b. Total Salary	$0	$0	$0	$0	$0
c. Total Benefits	$0	$0	$0	$0	$0
4. Technical Support and Equipment	$12,000	$12,000	$12,000	$12,000	$12,000
5. Library	$0	$0	$0	$0	$0
6. New or Renovated Space	0	0	0	0	0
7. Other Expenses	0	0	0	0	0
TOTAL (Add 1 – 7)	$12,000	$12,000	$12,000	$12,000	$12,000

M. Adequacy of Provisions for Evaluation of Program (as outlined in COMAR 13B.02.03.15).

1. Discuss procedures for evaluating courses, faculty and student learning outcomes.

Course outcomes are evaluated on a four-year cycle with one outcome being data collected per year. If a course has more than four outcomes, two outcomes may be assessed in one year to assure a four-year cycle is maintained. If the benchmark for the outcome is not obtained, course adjustments are made and the outcome is assessed for a second time in the next year, in addition to the outcome slated for that year's cycle. On the fifth year, the entire course is assessed based on questions produced by the Academic Learning Assessment Committee (ALAC). These course assessments are submitted and reviewed by the Dean of the School, as well as ALAC.

Each course is evaluated by students using the IDEA survey.

Benefitted faculty in years 1-7 are evaluated each year via classroom observation, course review, faculty development plan, self-evaluation, and chair evaluation. Benefitted faculty in years 8+ are evaluated every four years based on the same criteria.

2. Explain how the institution will evaluate the proposed program's educational effectiveness, including assessments of student learning outcomes, student retention, student and faculty satisfaction, and cost-effectiveness.

The Systematic Process of Assessment's primary focus is to meet the institutional value of Excellence which is defined as committing to high standards and clear expectations. The Systematic Process of Assessment collects information to determine whether CSM's academic offerings are having the appropriate educational impact on students. The process is outlined below.

Program Assessment at CSM is a cyclical process that includes:

1. Program Reviews are conducted every five-six years, or more often as needed.
2. Academic certificate programs are included within the review of degree programs.
3. Program Monitoring is conducted every year as part of the End of Year (EOY) report.
4. Program Assessments of Student Learning conducted on a cycle established by faculty.

In addition, CSM conducts course evaluations every semester or, more often when deemed necessary.

The program reviews include collecting and analyzing information regarding student retention, student and faculty satisfaction, and cost-effectiveness of the program. The program review consists of a self-study, an external review, and an executive summary which includes an action plan for improving any areas of deficit mentioned above.

N. Consistency with the State's Minority Student Achievement Goals (as outlined in COMAR 13B.02.03.05).

1. Discuss how the proposed program addresses minority student access & success, and the institution's cultural diversity goals and initiatives.

The College of Southern Maryland defines civility, according to Civility Statement (csmd.edu), as the demonstration of respect for others through basic courtesy and the practice of behaviors that contribute toward a positive environment for learning and working. While on any college campus or facility, attending any college event, or on any college electronic/cyber space (online course, email, telephone, etc.), faculty, staff, students, and visitors can all have the expectation of civility from one another.

The college views the following ideals as fundamental to civil behavior:

- Courteous and honest communication in both face-to-face and electronic environments
- Fair and just treatment of individuals
- Freedom from harassment
- Collegiality
- Support for a diverse campus community
- Adherence to the values of the professions in dealings with students, colleagues, and associates
- Respect for diverse cultures and points of view
- Restraint from vulgar and offensive language

Members of the college community can expect these ideals are modeled consistently by trustees, administrators, faculty, and staff.

By joining Achieving the Dream in 2019, the College of Southern Maryland is actively seeking to improve student learning with a sharp focus on closing equity gaps according to Institutional Equity (csmd.edu). In 2021, the college's Board of Trustees developed four strategic goals with the second goal being to ensure equity in all programs and services. Meeting this goal has four strategies:

- Improve hiring practices to ensure equity for all
- Use disaggregated data to close equity gaps
- Expand digital access and technology to ensure equity for all learners
- Strengthen cultural competency among all employees

The Equity and Inclusive Diversity Office at the college works to nurture an environment at CSM that is welcoming, inclusive, and restful for all students, staff, faculty, and visitors according to Equity and Inclusive Diversity (csmd.edu).

O. Relationship to Low Productivity Programs Identified by the Commission:

1. If the proposed program is directly related to an identified low productivity program, discuss how the fiscal resources (including faculty, administration, library resources and general operating expenses) may be redistributed to this program.

This program is not identified as a low productivity program.

P. Adequacy of Distance Education Programs (as outlined in COMAR 13B.02.03.22)

1. Provide affirmation and any appropriate evidence that the institution is eligible to provide Distance Education.

This program will not be offered as a distance education program.

2. Provide assurance and any appropriate evidence that the institution complies with the C-RAC guidelines, particularly as it relates to the proposed program.

The program is not offered as a distance learning program.